



SEQUENCE LISTING

<110> Advisys
Baylor College of Medicine

<120> SYNTHETIC MUSCLE PROMOTERS WITH ACTIVITIES EXCEEDING NATURALLY OCCURRING
REGULATORY SEQUENCES IN CARDIAC CELLS

<130> 108328.00161 - AVSI-0027

<140> 10699597
<141> 2003-10-30

<150> US 60/423,536
<151> 2002-11-04

<160> 22

<170> PatentIn version 3.1

<210> 1
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<212> DNA
<213> artificial sequence

<220>
<223> SRE control elements used in the promoters.

<400> 1
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<213> artificial sequence

<220>
<223> MEF-1 control element used in the promoters

<400> 2
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<223> MEF-2 control element used in the promoters.

<400> 3
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<223> TEF-1 control element used in the promoters.

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13

<210> 5

<211> 335

<212> DNA

<213> artificial sequence

<220>

<223> Nucleic acid sequence of an eukaryotic promoter c5-12.

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aaaataactc ccgggagtta ttttttagagc ggaggaatgg tggacacca aatatggcga 180

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<210> 6

<211> 40

<212> PRT

<213> artificial sequence

<220>

<223> This is the artificial sequence for GHRH (1-40)OH.

<220>

<221> MISC_FEATURE

<222> (1)..(1)

<223> Xaa at position 1 may be tyrosine, or histidine

<220>

<221> MISC_FEATURE

<222> (2)..(2)

<223> Xaa at position 2 may be alanine, valine, or isoleucine.

<220>

<221> MISC_FEATURE

<222> (15)..(15)

<223> Xaa at position 15 may be alanine, valine, or isoleucine.

<220>

<221> MISC_FEATURE

<222> (27)..(27)

<223> Xaa at position 27 may be methionine, or leucine.

<220>
 <221> MISC_FEATURE
 <222> (28)..(28)
 <223> Xaa at position 28 may be serine or asparagine.

<400> 6

Xaa Xaa Asp Ala Ile Phe Thr Asn Ser Tyr Arg Lys Val Leu Xaa Gln
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Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Xaa Xaa Arg Gln Gln Gly
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Glu Arg Asn Gln Glu Gln Gly Ala
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<210> 7
 <211> 3534
 <212> DNA
 <213> artificial sequence

<220>
 <223> Nucleic acid sequence for the HV-GHRH plasmid.

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<210> 8

<211> 3534

<212> DNA

<213> artificial sequence

<220>

<223> Nucleic acid sequence for the TI-GHRH plasmid.

<400> 8

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<210> 9

<211> 3534

<212> DNA

<213> artificial sequence

<220>

<223> Nucleic acid sequence for the TV-GHRH plasmid.

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<210> 10

<211> 3534

<212> DNA

<213> artificial sequence

<220>

<223> Nucleic acid sequence for the 15/27/28 GHRH plasmid.

<400> 10

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<210> 11
 <211> 2710
 <212> DNA
 <213> artificial sequence
 <220>

<223> Vector with a mouse codon optimized GHRH analog sequence

<400> 11

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gagttat	240
tcgccatatt tgggtgtccg ccctcggccg gggccgcatt cctggggggc gggcggtgct	300
cccggccgcc tcgataaaag gctccggggc cggcgggcgc ccacgagcta cccggaggag	360
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cttcaccacc aactacagga agctgctgag ccagctgtac gccaggaagg tgatccagga	600
catcatgaac aagcagggcg agaggatcca ggagcagagg gccaggctga gctgataagc	660
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cagacgttca acccaggctg ccggagaacc tgcatgcaga ccatcctgtt caatcatgctg	2520
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cggcaagaaa gccatccagt ttactttgca gggcttccca accttaccag agggcgcccc	2640
agctggcaat tccggttcgc ttgctgtcca taaaaccgcc cagtctagca actgttggga	2700
agggcgatcg	2710

<210> 12
 <211> 2713
 <212> DNA
 <213> artificial sequence

<220>
 <223> Vector with a rat codon optimized GHRH analog sequence

<400> 12	
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cggcaccatc ctcacgacac ccaaatatgg cgacgggtga ggaatgggtgg ggagttat	120
ttagagcggg gaggaaggtg ggcaggcagc aggtgttggc gctctaaaaa taactcccgg	180
gagttat	240
tcgccatatt tgggtgtccg ccctcgcccg gggccgcatt cctgggggcc gggcgggtgct	300
ccgcccgc tcgataaaag gctccggggc cggcggcggc ccacgagcta cccggaggag	360
cgggagggcg caagcggatc ccaaggccca actccccgaa ccactcaggg tcctgtggac	420
agctcaccta gctgcatgg ccctgtgggt gttcttcgtg ctgctgaccc tgaccagcgg	480

aagccactgc agcctgcctc ccagccctcc cttcagggtg cgccggcacg ccgacgccat	540
cttcaccagc agctacagga ggatcctggg ccagctgtac gctaggaagc tcctgcacga	600
gatcatgaac aggcagcagg gcgagaggaa ccaggagcag aggagcaggt tcaactgata	660
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gccactccag tgcccaccag ccttgtccta ataaaattaa gttgcatcat tttgtctgac	780
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aactgcagca cacggaacac cagtgggtgc cagccaagac agacgagctg cttcatcctg	2340
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tggcggcaag aaagccatcc agtttacttt gcagggcttc ccaaccttac cagagggcgc	2640
cccagctggc aattccggtt cgcttgctgt ccataaaacc gccagtccta gcaactgttg	2700
ggaagggcga tcg	2713

<210> 13
 <211> 2704
 <212> DNA
 <213> artificial sequence

<220>
 <223> Vector with a bovine codon optimized GHRH analog sequence

<400> 13	
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cggcaccatc ctcacgacac ccaaatatgg cgacgggtga ggaatggtgg ggagttat	120
ttagagcggg gaggaagggtg ggcaggcagc aggtgttggc gctctaaaaa taactcccg	180
gagttat	240
tcgccatatt tgggtgtccg ccctcggccg gggccgcatt cctgggggcc gggcgggtgct	300
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gtgccacca gccttgctct aataaaatta agttgcatca tttgtctga ctaggtgtcc	780
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atcg	2704

<210> 14
<211> 2704
<212> DNA
<213> artificial sequence

<220>
<223> Vector with a ovine codon optimized GHRH analog sequence

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tgcttgggtg tcaaacggac aggtagctgg gtccagggtg tgcagacgac gcattgcac	2160
agccatgata gaaactttct ctgccggagc caggtgagaa gacagcaggt cctgaccgg	2220
aacttcaccc agcagcagcc agtcacgacc agcttcagta actacatcca gaactgcagc	2280
acacggaaca ccagtgggtg ccagccaaga cagacgagct gcttcacct gcagttcatt	2340
cagagcacca gacaggtcag ttttaacaaa cagaactgga cgaccctgtg cagacagacg	2400
gaaaacagct gcatcagagc aaccaatggg ctgctgtgcc cagtcataac caaacagacg	2460
ttcaaccag gctgccggag aacctgcatg cagaccatcc tgttcaatca tgcgaaacga	2520
tcctcatcct gtctcttgat cagatcttga tccccgccc catcagatcc ttggcggcaa	2580
gaaagccatc cagtttactt tgcagggtt cccaacctta ccagagggcg cccagctgg	2640
caattccggg tcgcttgctg tccataaaac cgcccagttc agcaactgtt gggaagggcg	2700
atcg	2704

<210> 15
 <211> 2713
 <212> DNA
 <213> artificial sequence

<220>
 <223> Vector with a chicken codon optimized GHRH analog sequence

<400> 15	
tgtaatacga ctactatag ggcgaattgg agtccaccg cgggtggcggc cgtccgccct	60
cggcaccatc ctacgacac ccaaatatgg cgacgggtga ggaatgggtg ggagttatct	120
ttagagcggg gaggaagggt ggcaggcagc aggtgttggc gctctaaaaa taactcccgg	180
gagttatctt tagagcggag gaatgggtga caccctaaata tggcgacggg tcctcaccgg	240
tcgcatatt tgggtgtccg cctcggccg gggccgcatt cctggggggc gggcgggtgct	300

cccccccgcc tcgataaaaag gctccggggc cggcgggcggc ccacgagcta cccggaggag	360
cgggaggcgc caagcggatc ccaaggccca actccccgaa ccaactcaggg tcctgtggac	420
agctcaccta gctgccatgg ccctgtgggt gttctttgtg ctgctgaccc tgacctccgg	480
aagccactgc agcctgccac ccagcccacc cttccgcgtc aggcgccacg ccgacggcat	540
cttcagcaag gcctaccgca agtccttggg ccagctgagc gcacgcaact acctgcacag	600
cctgatggcc aagcgcgtgg gcagcggact gggagacgag gccgagcccc tgagctgata	660
agcttatcgg ggtggcatcc ctgtgacccc tccccagtgc ctctcctggc cctggaagtt	720
gccactccag tgcccaccag ccttgtccta ataaaattaa gttgcatcat tttgtctgac	780
taggtgtcct tctataatat tatgggggtg aggggggtgg tatggagcaa ggggcaagtt	840
gggaagacaa cctgtagggc tcgagggggg gcccggtacc agcttttgtt cccttttagtg	900
agggttaatt tcgagcttgg tcttccgctt cctcgctcac tgactcgctg cgctcggtcg	960
ttcggctgcg gcgagcggta tcagctcact caaaggcggg aatacgggta tccacagaat	1020
caggggataa cgcaggaaaag aacatgtgag caaaaggcca gaaaaggcc aggaaccgta	1080
aaaaggccgc gttgctggcg tttttccata ggctccgccc ccctgacgag catcacaaaa	1140
atcgacgctc aagtcagagg tggcgaaacc cgacaggact ataaagatac caggcgtttc	1200
cccctggaag ctccctcgtg cgctctcctg ttccgaccct gccgcttacc ggatacctgt	1260
ccgcctttct cccttcggga agcgtggcgc tttctcatag ctcacgctgt aggtatctca	1320
gttcggtgta ggtcgttcgc tccaagctgg gctgtgtgca cgaaccccc gttcagcccc	1380
accgctgcgc cttatccggt aactatcgtc ttgagtccaa cccggtaaga cacgacttat	1440
cgccactggc agcagccact ggtaacagga ttagcagagc gaggtatgta ggcggtgcta	1500
cagagttctt gaagtgggtg cctaactacg gctacactag aagaacagta tttggtatct	1560
gcgctctgct gaagccagtt accttcggaa aaagagttgg tagctcttga tccggcaaac	1620
aaaccaccgc tggtagcggg ggtttttttg tttgcaagca gcagattacg cgcagaaaaa	1680
aaggatctca agaagatcct ttgatctttt ctacggggct agcgcttaga agaactcatc	1740
cagcagacgg tagaatgcaa tacgttgaga gtctggagct gcaataccat acagaaccag	1800
gaaacgggta gcccatccac caccagttc ctctgcaatg tcacgggtag ccagtgcaat	1860
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attctcaacc atgatgttcg gcaggcatgc atcaccatga gtaactacca ggtcctcacc	1980
atccggcata cgagctttca gacgtgcaaa cagttcagcc ggtgccagac cctgatgttc	2040
ctcatccagg tcatcctggg caaccagacc tgcttccata cgggtacgag cacgttcaat	2100

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acgatgtttt gcctgggtggt caaacggaca ggtagctggg tccaggggtgt gcagacgacg 2160
cattgcatca gccatgatag aaactttctc tgccggagcc aggtgagaag acagcaggtc 2220
ctgacccgga acttcaccca gcagcagcca gtcacgacca gtttcagtaa ctacatccag 2280
aactgcagca cacggaacac cagtgggtgc cagccaagac agacgagctg cttcatcctg 2340
cagttcattc agagcaccag acaggtcagt tttaacaaac agaactggac gaccctgtgc 2400
agacagacgg aaaacagctg catcagagca accaatgggtc tgctgtgccc agtcataacc 2460
aaacagacgt tcaaccagg ctgccggaga acctgcatgc agaccatcct gttcaatcat 2520
gcgaaacgat cctcatcctg tctcttgatc agatcttgat cccctgcgcc atcagatcct 2580
tggcggcaag aaagccatcc agtttacttt gcagggcttc ccaaccttac cagagggcgc 2640
cccagctggc aattccggtt cgcttgctgt ccataaaacc gccagtcta gcaactgttg 2700
ggaagggcga tcg 2713

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<210> 16
<211> 382
<212> DNA
<213> artificial sequence

```

```

<220>
<223> This is the synthetic promoter c1-26.

```

```

<400> 16
ggcggccgag ggcggcgggg caggcagcag gtgttggcac cattcctcac cgctctaaaa 60
ataactcccg tgaggaatgg tgccgtcgcc atatttgggt gtcgacaccc aaatatggcg 120
acgggtgagg aatggtgggc aggcagcagg tggtgggaca cccaaatatg gcgacggcca 180
acacctgctg cctgccggga gttattttta gagcggggag ttattttttag agcggtgagg 240
aatggtggac acccaaatat ggcgacggcc ggggccgcat tcctgggggc cgggcgggtgc 300
tcccgccgc ctcgataaaa ggctccgggg ccggcggcgg cccacgagct acccgaggga 360
gcgggaggcg ccaagctcta ga 382

```

```

<210> 17
<211> 218
<212> DNA
<213> artificial sequence

```

```

<220>
<223> This is the synthetic promoter sequence for c2-26.

```

```

<400> 17
cggccgtcgc catatttggg tgtccgctct aaaaataact cccgacaccc aaatatggcg 60
acggggcagg cagcaggtgt tgggacaccc aaatatggcg acggccgggg ccgcattcct 120

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gggggccggg cgggtgctccc gcccgcctcg ataaaaggct ccggggccgg cggcggccca 180
 cgagctaccc ggaggagcgg gaggcgcaa gctctaga 218

<210> 18
 <211> 230
 <212> DNA
 <213> artificial sequence

<220>
 <223> This is the synthetic sequence for c2-27.

<400> 18
 cggccgtcgc catatttggg tgtcggcagg cagcaggtgt tggcaccatt cctcaccgt 60
 cgccatattt ggggtgtcggc aggcagcagt gttgggacac ccaaatatgg cgacggccgg 120
 ggccgcattc ctggggggccg ggcggtgctc ccgcccgcct cgataaaagg ctccgggggc 180
 ggcgggcgcc cacgagctac ccggaggagc gggaggcgcc aagctctaga 230

<210> 19
 <211> 231
 <212> DNA
 <213> artificial sequence

<220>
 <223> This is the synthetic promoter for c5-5.

<400> 19
 cggccgtccg ccctcgggac acccaaatat ggcgacgggt gaggaatggt gcaccattcc 60
 tcacgggagt tattttttaga gcggtgagga atggtggaca ccaaatatg gcgacggccg 120
 gggccgcatt cctggggggcc gggcggtgct ccgcccgcct tcgataaaag gctccggggc 180
 cggcgggcggc ccacgagcta ccggaggag cgggaggcgc caagctctag a 231

<210> 20
 <211> 255
 <212> DNA
 <213> artificial sequence

<220>
 <223> This is the synthetic promoter for c6-5.

<400> 20
 cggccgtcgc catatttggg tgtcccaaca cctgctgcct gcccgcgc catatttgg 60
 gtcggcaggc agcaggtgtt ggccaacacc tgctgcctgc cgggagttat ttttagagcg 120
 gacacccaaa tatggcgacg gccggggccg cattcctggg ggccggggcg tgctcccgcc 180
 cgctcgata aaaggctccg gggccggcgg cggccacga gctaccgga ggagcgggag 240
 gcgccaagct ctaga 255

<210> 21
 <211> 283
 <212> DNA
 <213> artificial sequence

<220>
 <223> This is the synthetic promoter for c6-16.

<400> 21
 cggccgtcgc catatttggg tgtccgctct aaaaataact cccccaacac ctgctgcctg 60
 ccccgctgcc atatttgggt gtcggcaggc agcaggtgtt ggccaacacc tgctgcctgc 120
 cccaacacct gctgcctgcc ccgtcgccat atttggtgtc cgccctcggc cggggccgca 180
 ttcttggggg cggggcggtg ctcccgccc cctcgataaa aggctccggg gccggcggtg 240
 gccacgagc taccggagg agcgggagg gccaaagctct aga 283

<210> 22
 <211> 263
 <212> DNA
 <213> artificial sequence

<220>
 <223> This is the synthetic promoter for c6-39.

<400> 22
 cggccgtccg ccctcggggg agttattttt agagcgccaa cacctgctgc ctgccccgtc 60
 gccatatttg ggtgtcggca ggcagcaggt gttgggggag ttatttttag agcgccgtcg 120
 ccatatttgg gtgtcccagag ggcggacggc cggggccgca ttcttggggg ccgggcggtg 180
 ctcccgccc cctcgataaa aggctccggg gccggcggtg gccacgagc taccggagg 240
 agcgggagg gccaaagctct aga 263